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| 09/671,084 | 09/27/2000 | Toshihide Ito | 335-37 | 6569 |

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Laff Whitesel Conte & Saret
401 North Michigan Avenue
Chicago, IL 60611

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| EXAMINER |
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IP, SIKYIN

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1742

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/671,084
Filing Date: September 27, 2000
Appellant(s): ITO ET AL.

MAILED
AUG 12 2005
GROUP 1700

Brian J. Lum
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed May 4, 2005 appealing from the Office action mailed November 2, 2004.

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The claims have been rejected non-final after RCE. No amendment has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

| Number | Name | Date | |
|-----------|--------------------|---------|--|
| 19816671 | YAMASHITA (German) | 10-1998 | |
| 10286689 | YAMASHITA (Japan) | 10-1998 | (English equivalent of above reference) |
| 10034376 | TAKI (Japan) | 02-1998 | |
| 6,241,942 | MURATA | 06-2001 | |
| 08132279 | MITG (Japan) | 05-1996 | |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Appellant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3 and 5-6 are rejected under 35 U.S.C. § 103 as being unpatentable over DE 19816671 (JP 10286689 – English equivalent of DE 19816671), JP 10034376, or USP 6241942 to Murata.

JP 10286689 discloses composition and melting temperature in abstract (57), JP 10034376 discloses composition in abstract and melting temperature in Table 1, or Murata discloses composition and melting temperature in abstract and example 1 in col. 8. Said references disclose compositions and melting temperatures overlapped the claimed solder alloy composition and temperature range. When prior art compounds essentially "bracketing" the claimed compounds in structural similarity are all known, one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar properties. In re Gyurik, 596 F.2d 1012, 1018, 201 USPQ 552, 557 (CCPA 1979); See In re May, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978) and In re Hoch, 57 CCPA 1292, 1296, 428 F.2d 1341, 1344, 166 USPQ 406, 409 (1970). Therefore, it would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in a prior art reference because the prior art reference finds that the prior art composition in the entire disclosed range has a suitable utility. Also see MPEP § 2131.03 and § 2123.

With respect to the claimed copper dissolution which reads on zero, thus cited references need not disclose said limitation.

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With respect to the solder viscosity which is material property. Thus, it would have been inherently possessed by solder materials of cited references.

In re Best, 195 USPQ, 430 and MPEP § 2112.01.

"Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the appellant and the prior art are the same, the appellant has the burden of showing that they are not.' In re Spada, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best, 195 USPQ 430, 433 (CCPA 1977)."

Claims 1-3, 5-6, and 8 are rejected under 35 U.S.C. § 103 as being unpatentable over JP 08132279.

JP 08132279 discloses composition in abstract and melting temperature in Example, [0012]. The Pb-free Sn-Ag-Cu solder alloy of said reference contains Ni and Fe with compositions overlap the claimed solder alloy composition and melting temperature. The Ag, In, Sb, Ni, Fe, and Bi can raise the reinforcement of solder material [0011]. Therefore, when prior art compounds essentially "bracketing" the claimed compounds in structural similarity are all known, one of ordinary skill in the art would clearly be motivated to make those claimed compounds in searching for new products in the expectation that compounds similar in structure will have similar properties. In re Gyurik, 596 F.2d 1012, 1018, 201 USPQ 552, 557 (CCPA 1979); See In re May, 574 F.2d 1082, 1094, 197 USPQ 601, 611 (CCPA 1978) and In re Hoch, 57 CCPA 1292, 1296, 428 F.2d 1341, 1344, 166 USPQ 406, 409 (1970). Therefore, it

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would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in a prior art reference because the prior art reference finds that the prior art composition in the entire disclosed range has a suitable utility. Also see MPEP § 2131.03 and § 2123.

With respect to the claimed copper dissolution which reads on zero, thus cited references need not disclose said limitation.

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(10) Response to Argument

Appellant's arguments filed May 4, 2005 have been fully considered but they are not persuasive.

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The appealed claim 1 and teaching of references are summarized in the table below:

| Elements | Claim 1 appealed | DE' 671 abstract | JP '376 abstract | USP '942 abstract | JP '279 abstract |
|-----------------------------|---------------------|--------------------------|--------------------------|---|---------------------|
| Ag | 1-2 | <3.0 | 0.1-5 | 0.1-3.5 | <5.0 |
| Cu | 0.4-0.9 | >0-1.0 | 0.05-2 | 0.1-3 | <3.0 |
| Ni | 0.02-0.06 | >0-1.0 | 0.0005-0.1 | 0.01-1 | <5.0 |
| Sn | Bal | bal | Bal | Bal | Bal |
| Solder Liquidus temp. | Liq. <240°C | 220-243 °C Table 1 | 198-240 °C Table 1 | 230-240 °C col. 2, lines 45-50 | <240°C [0012] |

Appellants' argument in page 6, second full paragraph of instant brief is noted. But, all cited references disclosed soldering temperature below 240°C (see bottom row of Table above). Therefore, picking Ni and Ag and other elements for a liquidus temperature below 240°C is contemplated within ambit of ordinary skill artisan.

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Appellants' exhibits in the attached documents 1-3 and statement in pages 14-19 of instant remarks filed July 29, 2004 are noted. But, document 1 fails to show either Ag, Cu, Ni, or Fe is critical because copper dissolution rate is zero when Ni/Fe is zero. Furthermore, in view of instant Figures 8-10 of specification, that in general copper dissolution rate is less than 0.2 $\mu\text{m}/\text{sec}$ regardless of the Ag, Cu, Ni, and/or Fe contents. Document 2 is not related to instant claims because the Ag content (3.5 wt.%) is outside the claimed range. Document 3 fails to show the combination of claimed alloying elements because Ni/Fe content is not included.

Appellants' argument in pages 7-8, section a of instant brief is noted. First, the instant transitional expression "consisting essentially of" limits the scope of a claim to the specified ingredients and those that do not materially affect the basic and novel characteristics of a composition. *Ex parte Davis, et al.*, 80 USPQ 448, 450 (PTO Bd. App. 1948), *In re Janakirama-Rao*, 317 F. 2d 951, 137 USPQ 893, 894 (CCPA 1963), *In re Garner*, 412 F 2d 276, 162 USPQ 221, 223 (CCPA 1969), and *In re Herz, et al.*, 190 USPQ 461, 463 (CCPA 1976). When applicant contends that modifying components in the reference composition are excluded by the recitation of "consisting essentially of" applicant has the burden of showing the basic and novel characteristic of his/her composition - i.e. a showing that the introduction of these components would materially change the characteristics of applicant's composition. *In re De Lajarte*, 337 F 2d 870, 143 USPQ 256 (CCPA 1964) and *Ex parte Davis, et al.*, 80 USPQ 448, 450 (PTO Bd. App. 1948). Appellants fail to show additional essential elements from cited references would materially change the characteristics of applicant's composition.

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Appellants' argument in sections b-c. pages 8-11 of instant brief is noted. But, unexpected synergistic effect of Ag/Ni and Ag/Cu on copper dissolution and liquidus temperature has not been shown. Moreover, all cited references disclose soldering temperature below 240°C (please see Table above for related section/paragraph). Figures 8-11 in instant specification show that copper dissolution would be reduced when Ni, Cu, Ag, and Fe elements included in the Sn solder. The higher the said elements contents would lower the copper dissolution. Therefore, the claimed proportions of said elements have no criticality or unexpected results.

Appellants' argument with respect to USP 6179935 Table 3 is noted. First, said USP is not on record. Second, example in Table 3 of said patent is broader than the claimed feature in said patent.

Appellants' argument as set forth in pages 11-12, section 3 of instant brief is noted. But, the instant claimed copper dissolution rate includes zero or no copper dissolution.

Appellants' argument in section 5, claim 6, page 12-13 of instant brief is noted. First, appellants never showed alleged synergistic effects of Ag/Ni and Ag/Cu. Second, there is no evidence that the claimed viscosity of a solder is not a material and temperature properties.

Appellants' argument with respect to JP 08132279 in pages 13-16, sections 1-5 is noted. The argument is substantially same as above references; thus, examiner reiterates the responses set forth above.

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Appellants' argument in section 6, pages 16-17 of instant brief is noted. But, cited reference discloses soldering temperature below 240°C.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

S. Ip

Conferees:

Roy V. King, SPE

ROY KING 
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

Robert Warden, Jr. SPE

APPEAL CONFERENCE:



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Brain J. Lum, Reg. No. 54,282

MICHAEL BEST & FRIEDRICH LLP

401 North Michigan Ave., Suite 1900

Chicago, IL 60611